Technology Opportunity

Automated Data Reduction Through Event Detection

The National Aeronautics and Space Administration (NASA) seeks to transfer event detection technology that has been proven to increase operational efficiency, enhance repeatability of analysis, and enable automated data reduction and diagnosis.

Potential Commercial Uses

Data analysis or review for

- Engineering functions such as
  - Testing and evaluation
  - Data screening
  - Quality control
  - System maintenance

- Specific industries, for example,
  - Product manufacturing
  - Biomedical
  - Power/energy
  - Aerospace
  - Research and development

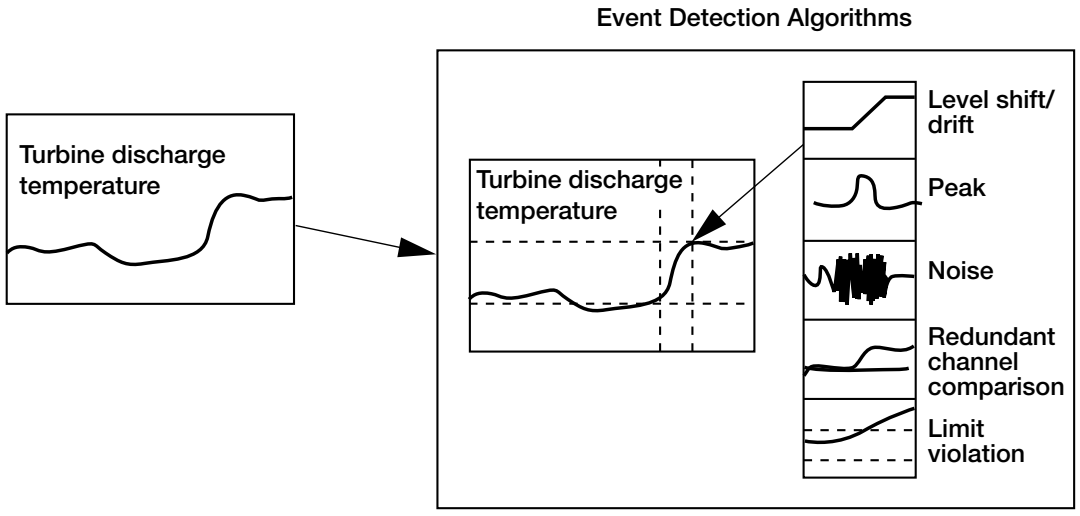
Benefits

- Reduces by an order of magnitude the manpower and time to review data
- Reduces data processing by several orders of magnitude
- Increases data review consistency and reliability

The Technology

Event detection algorithms perform fast and consistent identification of all events, nominal and anomalous, present within a data stream. The algorithms are tailored by the user for an application and then embedded within user software. The algorithms enable automated or faster manual data reviews by reducing by several orders of magnitude the amount of information that needs to be reviewed. Event detection routines are written in C. They use application-specific information in combination with statistical algorithms to detect events. These algorithms have been encoded to allow for easy application and inclusion by the user. Although

Event Detection Process



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tailoring of the algorithms for user application requires no programming, minimal programming is required for embedding the algorithms into an application. Event detection routines can be used for both post-test and real-time data screening. These algorithms detect drifts, spikes, peaks, noise, level-shifts, and limit exceedances.

Options for Commercialization

The event detection algorithms were developed by the NASA Lewis Research Center. Work is currently being conducted with Arnold Engineering Development Center, under a Memorandum of Understanding, to apply and transfer this technology to gas turbine engine test data, and with Lockheed Martin to apply this technology to Atlas/Centaur prelaunch data processing. Researchers are interested in further event detection development and in transferring current algorithms to industry. A set of post-test and real-time event detection algorithms is available for application.

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Statistical analysis
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